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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/052,114	01/17/2002	Levon A. Mitchell	2083.000200/P6639	1644

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EXAMINER

LEFLORE, LAUREL E

ART UNIT	PAPER NUMBER
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2673

9

DATE MAILED: 07/02/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/052,114

Applicant(s)

MITCHELL, LEVON A.

Examiner

Laurel E LeFlore

Art Unit

2673

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 06 May 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-19 and 26-42 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-19 and 26-42 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 January 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                                   | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)               | Paper No(s)/Mail Date. _____  |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date 8.   | 6) <input type="checkbox"/> Other: _____                                    |

**DETAILED ACTION**

***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claim 7 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

3. Claim 7 recites the limitation "the display panel" in line 2. There is insufficient antecedent basis for this limitation in the claim. Note that claim 7 is dependent on claim 5 as currently amended. However, claim 7, as originally filed, was dependent on claim 6, which discloses "a display panel". Examiner's contention is that claim 7 possibly was meant to depend from claim 6. Thus, claim 7 is rejected twice using prior art in the following action, once as if dependent on claim 5, and again as if dependent on claim 6.

***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 5, 7, 10, 11, 26, 27, 33 and 37 are rejected under 35 U.S.C. 102(b) as being anticipated by Cairns 4,962,530.

3. In regard to claim 1, Cairns discloses in column 2, lines 55-60, "The keyboard consists of a matrix of keys and variable visible indicia of integers and letters...the variable visible indicia are shown on display means, such as LEDs, associated with the respective keys." Also see figure 4, depicting the display of indicia on keys. Thus, Cairns discloses a method for displaying information on a plurality of keys on a keyboard in which the keyboard is changed from a first to a second configuration, each of the configurations displaying different indicia of integers and letters. Cairns further discloses a request received to change the configuration of the plurality of keys in column 3, lines 15-19, "The integers and letters...appearing on the LED's change with each display cycle which accompanies the logging-in of a symbol."

Cairns further discloses that the surface of each key is operable to be depressed. Again see figure 4 and see column 4, lines 19-20, disclosing, "Then one of the buttons 10A-I is depressed and a symbol is logged in."

4. In regard to claim 5, see Cairns rejection of claim 1. Cairns further discloses that each of the plurality of keys includes a matrix of light emitting devices. See column 3, lines 1-3, "The matrix is a display panel which...is made up of 9 matrix locations represented by LED's."

5. In regard to claim 7, as best understood, see rejection of claim 1. Visible indicia of integers and letters are understood to be graphics.

6. In regard to claim 10, see Cairns rejection of claim 1. Also, Cairns discloses a control unit adapted to display the varying integers and letters in column 3, lines 23-26,

"cryptographing ROM is programmed to provide to the matrix in predetermined manner the display changes correlated with logging in successively password symbols".

7. In regard to claim 11, see Cairns rejection of claim 1. Further see figure 4, depicting a plurality light emitting devices on the key caps of "a representative keyboard and display panel". (See column 3, line 59.)

8. In regard to claim 26, see Cairns rejections of claims 1, 5, 10 and 20. Also see column 3, lines 1-2, "The selected symbol is introduced into a microprocessor." Thus, the information displayed on the key is provided to the processor in response to detecting the selection of the key.

9. In regard to claim 27, see Cairns rejection of claim 5.

10. In regard to claim 33, see rejections of claims 1 and 10. The cryptographing ROM is a computer readable storage media including program instructions.

11. In regard to claim 37, see rejection of claim 5.

12. Claim 42 is rejected under 35 U.S.C. 102(b) as being anticipated by DeMonte.

13. In regard to claim 42, Demonte discloses a keyboard, comprising a plurality of keys, wherein a surface of each of the plurality of keys is operable to be depressed. See figures 1 and 11 and column 2, lines 9-13, disclosing, "a key 20 comprises a support 23, 123 which slidably guides a movable part 24, 124 provided in its upper portion with a finger-operable cap 25, 125 an normally held in a raised position by resilient means 26, 126."

Demonte further discloses a control unit configured to cause a display of a first set of symbols of a first language on the plurality of keys in a first mode and a display of

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a second set of symbols of a second, different language on the plurality of keys in a second mode. See column 3, lines 9-29, disclosing, "The key 20, 120 is particularly advantageous for use in a keyboard 60 (see FIG. 4) of electronic typewriters which are intended for printing a plurality of languages A, B, . . . X...the typewriter provides a selector 61 which supplies the control unit (CPU) 62 of the machine with a code indicative of the keyboard associated with the selected language A, B, . . . X. In accordance with the specific standard, corresponding groups (font) of characters and national symbols 63 which can be selectively operated by the various keys of the keyboard belong to the selected keyboard. The selector code 61 causes activation of a transcoding routine which converts the position code in respect of the depressed key 20 into a machine code in respect of the symbol introduced. The circuit 50 in turn activates the chips 40 to display at the displays 31 the symbols associated with each key 20 in the position which belongs to that symbol of the selected keyboard A, B, . . . X."

***Claim Rejections - 35 USC § 103***

14. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

15. Claims 1- 4, 8-10, 15-18, 20-22, 25, 26, 28-30, 33-36, 40 and 41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Litt et al. 4,752,772 in view of Gouzman et al. 6,278,441.

16. In regard to claim 1, Litt discloses a method for displaying information on the keys of a keyboard. See column 2, lines 57-59, disclosing, "The display comprises a plurality of pins mounted inside the key so that they can be raised and lowered in the key." Litt further discloses that a request is received to change the configuration of the keyboard from a first to a second configuration, saying (See column, line 68 to column 3, line 2.), "Any desired Braille character can thus be generated by using the proper control signal to activate the appropriate combination of solenoids." Thus, information to display on the keys of the keyboard is determined and displayed in the second configuration, the second configuration being that of activated solenoids.

Litt further discloses that the surface of each key is operable to be depressed. Note, for example, column 4, lines 34-35, disclosing, "The keycap 12 has a top surface 16 which the user contacts to depress the key 10." Note also in column 2, lines 53-54, Litt discloses that the key is "a key on the standard keyboard". It is inherent that a standard keyboard has depressible keys.

Litt does not disclose that information is displayed on a plurality of keys or that the configuration of a plurality of keys is changed. Gouzman discloses an invention in which information is displayed on a plurality of keys and that the configuration of a plurality of keys is changed. See column 1, lines 63-67, disclosing, "theTIS [tactile interface system] has a plurality of tactile displays which may be used to replace or supplement visual perception, and to supplement other data interfaces, including audio and motor, thereby increasing the data input/output options available to the user." Further see lines 38-42 of column 1, disclosing, "The term 'tactile display,' referred to

herein also as TD, is used throughout the specification and claims to mean any sort of tactile display...,as well as an embossed type tactile display having a plurality of pins which are selectably retractable with respect to a surface". (Note that this plurality of pins configuration is the tactile display type utilized by Litt.)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the invention of Litt by having information displayed on a plurality of keys and the configuration of a plurality of keys changed, as in the invention of Gouzman. One would have been motivated to make such a change based on the the teaching of Gouzman that "a plurality of tactile displays...may be used to replace or supplement visual perception, and to supplement other data interfaces, including audio and motor, thereby increasing the data input/output options available to the user."

Also, having a plurality of keys for displaying information and changing configuration, instead of only one key (as in the invention of Litt) simply duplicates parts for a multiple effect, which is an obvious design choice (see *St. Regis Paper Co. v. Bemis Co., Inc.*, 193 USPQ 8 (7<sup>th</sup> Cir. 1977)).

17. In regard to claim 2, Litt in view of Gouzman discloses that the displaying of information comprises displaying Braille characters on the keys of the keyboard. (See rejection of claim 1.)

18. In regard to claim 3, see rejection of claim 1. Also see Litt column 2, lines 64-66, disclosing, "When a solenoid is activated, the pin connected thereto rises in the key causing the pin end to extend above the top surface of the key." The top surface of the key is a key cap (See figures 2 and 3, element 12 and column 4, lines 32-34) and thus,



displaying information comprises raising one or more pins of the matrix of pins above the key cap to form Braille letters. The pins are formed in a matrix, as disclosed in column 2, lines 59-62, "The ends of the pins rest in holes which pass through the top of the key and which are arranged to yield a two column matrix".

19. In regard to claim 4, Litt in view of Gouzman discloses that a request is received to change the configuration of the display on the keys to a Braille configuration. See Litt column 3, lines 3-6, disclosing, "To use the key-embeddied Braille display...interface circuitry...is used to generate a control signal which drives the solenoids." Thus, a control signal from interface circuitry serves as the request to change configuration.

20. In regard to claim 8, Litt in view of Gouzman discloses that a user selects an option from a configuration panel to change the configuration of the keyboard. See Litt column 3, lines 6-16, disclosing "by means of standard cursor controls the user can move the reading cursor about the text" and that the interface circuitry (see rejection of claim 4) generates the control signal causing the keyboard configuration to change by "first identifying, through the use of a reading cursor, a position within text which might normally be displayed". Thus, it is understood that a user might manipulate a cursor with (arrow) keys of a conventional keyboard, causing the configuration of the keyboard to change to the displaying of Braille. Such arrow keys or other "standard cursor controls" on a keyboard would be a configuration panel. Also see figure 1, element 17, depicting arrow keys and column 6, lines 22-25, disclosing, "The user can move the reading cursor to a different location...by means of cursor control circuitry 17 which offers standard up-down, left-right cursor control."

21. In regard to claim 9, see rejection of claims 4 and 8. The "interface circuitry", a processor-based system, generates the control signal which changes the configuration of the keyboard.

22. In regard to claim 10, Litt discloses in column 2, line 68 to column 3, line 2, "Any desired Braille character can thus be generated by using the proper control signal to activate the appropriate combination of solenoids." Thus, Litt et al. discloses a keyboard with at least one key adapted to display at least two symbols (Braille characters). See column 3, lines 4-6 disclosing "interface circuitry...used to generate a control signal which drives the solenoids." Thus, Litt discloses a control unit that is adapted to display a first symbol in a first mode and a second symbol in a second mode, as the movement of the solenoids generates various Braille characters. Also see rejection of claim 1. It is inherent that if the symbols on a plurality of keys, as in the rejection of claim 1, a first and second set of symbols would be displayed.

23. In regard to claim 15, Litt discloses in column 3, lines 7-15, "The interface circuitry" is adapted to receive a request to change to the second mode (another Braille character) by "first identifying, through the use of a reading cursor, a position within text which might normally be displayed on a video screen and then generating a control signal which yields the Braille representation of the information appearing in that position." Thus, the request to change to the second mode is received from the reading cursor.

24. In regard to claim 16, see rejection of claim 8.

25. In regard to claim 18, see rejection of claim 3.

26. In regard to claim 26, see rejections of claims 1, 3, and 10. Litt further discloses that the control unit detects the selection of the key and provides information displayed on the key to the processor-based system (interface circuitry) in response to detecting the selection of the key. See column 2, lines 55-56, disclosing, "the modified key functions as a 'J' or 'F' key as well as a Braille display." See column 6, lines 9-11. disclosing, "The system includes a memory 25 for storing the alphanumeric text which is typed in at the keyboard 11 and which is normally displayed on the video screen."

27. In regard to claim 28, see rejection of claim 26. It is understood that a "video screen" is a monitor.

28. In regard to claim 29, see rejection of claim 1.

29. In regard to claim 30, Litt discloses that the key comprises a housing for one or more pins of the matrix. See figures 2-4 and column 4, lines 35-36 and 40, disclosing, "Inside the keycap holder 14 is a cavity 18...Within the cavity 18 are eight pins 22." Thus, the keycap holder is a housing for the pins of the matrix. Litt et al. further discloses that the housing comprises an upper coil for causing the pins to rise above the top surface of the key. See figure 2-4 and column 5, lines 54-56, disclosing, "Activation of the solenoid 26 causes the corresponding pin 22 to rise in the holder 14 so that the end 22a appears above the top surface 16 of the keycap 12." See element 51 of figure 2-4, depicting a spring (coil) included in the solenoid.

30. In regard to claim 17, Litt discloses an invention similar to that which is in claim 17. See rejection of claim 10. Also see column 6, lines 9-11, referring to figure 1, disclosing, "The system includes a memory 25 for storing the alphanumeric text which is

typed in at the keyboard 11". Litt, however, does not include the memory within the keyboard. Instead, it is in the digital data processor 19 (see column 1, line 66).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to include the memory 25 in the keyboard instead of in the digital data processor. Such an integration is a matter of design choice (in re Larson, 144USPQ 347 (CCPA 1965)).

31. In regard to claim 33, Litt discloses a processor enabled to display information on one or more keys of a keyboard in a first mode, receive a request to operate the keyboard in a second mode and display information on the keys of the keyboard based on the received configuration mode, as seen in the rejections of claims 1 and 9. See column 6, lines 17-22, in reference to figure 1, disclosing "the circuitry generates a conventional pointer or reading cursor which identifies a user selected location in memory 25. Then the circuitry conveys the information stored at that location to the Braille display key 10 where it appears as the equivalent Braille representation." Thus, Litt et al. discloses an article comprising one or more computer readable storage media (memory 25) containing instructions executable to enable a processor to display on the keys.

32. In regard to claim 34, see rejection of claim 2.

33. In regard to claim 35, see rejection of claim 3.

34. In regard to claim 36, see rejection of claim 4.

35. In regard to claim 40, see rejection of claim 8.

36. In regard to claim 41, see rejection of claim 9.

37. Claims 6, 7, 12-14, 38 and 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cairns 4,962,530 in view of Levanto 5,016,002.

38. In regard to claims 6, 12, and 38, Cairns discloses an invention similar to that which is disclosed in claims 6, 12 and 38. See Cairns 102 rejections of claims 1, 10 and 33. See column 1, lines 33-39, disclosing that the buttons on the keyboard can have light emitting diodes or a liquid crystal display. Cairns does not disclose that the display on the keys contains pixels.

Levanto discloses a "16-dot matrix...made up of elements which, for example in a liquid crystal display, are implemented as pixels." (See column 2, lines 65-67.)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use pixels in the liquid crystal display of Cairns. One would have been motivated to make such a change based on the teaching of Levanto that dot matrices are implemented as pixels in liquid crystal displays. Also, the use of pixels in liquid crystal displays is conventional.

39. In regard to claims 7, 13, 14 and 39 see 102 Cairns rejection of claim 1. Visible indicia of integers and letters are understood to be graphics. Also see Cairns rejection of claim 26. Introducing a selected symbol into a microprocessor is understood to constitute an input interface.

40. Claims 19, 31, and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Litt et al. 4,752,772 in view of Gouzman, as applied to claims 10, 18, 26, 29 and 30 above, and further in view of van Namen 5,896,076.

41. In regard to claims, 19, 31, and 32, Litt in view of Gouzman discloses an invention similar to that which is claimed in claims 19, 31 and 32. See rejection of claim 30 for similarities. Also see figures 2-4, element 51 and column 5, line 64-67, disclosing a coil used to lower the pin, causing a top portion of the pin to fall to a position in which it is substantially aligned with the top surface of the key when the pin falls to a preselected level ("rest position"). Litt in view of Gouzman does not disclose within the solenoid an upper and lower coil adapted to raise the pin or that energizing the upper coil causes a magnetically movable object to rise below the pins and fall when the upper coil is not charged.

Van Namen discloses a solenoid containing two coils with magnetic operation. See column 6, lines 43-48, which disclose "applying force to the armature...depends on the direction of the current in the coils." Thus, an armature (pin) can be moved with the magnetically utilizing the charging of coils.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the solenoid of Litt in view of Gouzman, making it a magnetically charged solenoid with two coils. One would have been motivated to make such a change based on the statement of Litt (see column 6, lines 45-49), "Although a linear solenoid actuating mechanism has been described herein, it is well know within the art that other alternative actuating mechanisms with appropriate connecting means could be substituted for linear solenoids and produce substantially the same results."

***Response to Arguments***

42. Applicant has amended the specification and claims to overcome the objection to the drawings and 35 U.S.C. 112 rejections of Paper No. 5. Objection to the drawings and previous 35 U.S.C. 112 rejections are withdrawn.

43. Applicant's arguments with respect to claims 1-19 and 26-42 have been considered but are moot in view of the new ground(s) of rejection.

44. Applicant's arguments filed 6 May 2004 have been fully considered but they are not persuasive.

45. Applicant argues the limitations of claims 8, 16 and 40 on page 13 of Paper No. 7. See the above rejections of claims 4 and 8. Note that Litt discloses that a request is received to change the configuration of the display on the keys to a Braille configuration. Specifically Litt discloses, "interface circuitry...is used to generate a control signal which drives the solenoids." Thus, a control signal from interface circuitry serves as the request to change configuration. Litt further discloses, "The interface circuitry gives the user the ability to read text character by character. It does this by first identifying, through the use of a reading cursor, a position within text which might normally be displayed on a video screen and then generating a control signal which yields the Braille representation of the information appearing in that position." Thus, Litt discloses that a user selects an option from a configuration panel to change the configuration of the keyboard. See Litt column 3, lines 6-16, disclosing "by means of standard cursor controls the user can move the reading cursor about the text" and that the interface circuitry (see rejection of claim 4) generates the control signal causing the keyboard configuration to change by "first identifying, through the use of a reading cursor, a

position within text which might normally be displayed". Thus, it is understood that a user might manipulate a cursor with (arrow) keys of a conventional keyboard, causing the configuration of the keyboard to change to the displaying of Braille. Such arrow keys or other "standard cursor controls" on a keyboard would be a configuration panel. Also see figure 1, element 17, depicting arrow keys and column 6, lines 22-25, disclosing, "The user can move the reading cursor to a different location...by means of cursor control circuitry 17 which offers standard up-down, left-right cursor control."

### ***Conclusion***

46. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

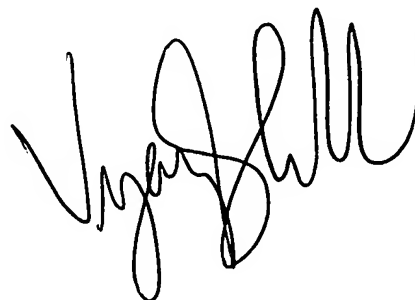


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Laurel E LeFlore whose telephone number is (703) 305-8627. The examiner can normally be reached on Monday-Friday 8-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bipin Shalwala can be reached on (703) 305-4938. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

LEL  
30 June 2004

A handwritten signature in black ink, appearing to read 'Vijay Shankar', with a stylized, cursive script.

**VIJAY SHANKAR  
PRIMARY EXAMINER**